PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

SATO, KENICHIRO, et al. Attorney Docket No.: Q58614

Appln. No.: 09/541,597 Group Art Unit: 1752

Confirmation No.: Not assigned Examiner: R. ASHTON

Filed: April 3, 2000

For: POSITIVE PHOTORESIST COMPOSITION FOR FAR ULTRAVIOLET EXPOSURE

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Kenichiro Sato, hereby declare and state that:

I am a citizen of Japan;

I graduated from Osaka University, Faculty of Engineering, Course of Applied Fine Chemistry in March, 1992;

Since April, 1992 I have been employed by Fuji Photo Film Co., Ltd., where I have been engaged in research and development in the technology of photoresist photosensitive materials for semiconductors;

I am a co-inventor of the above-identified application;

In order to demonstrate the unexpected superiority achieved by the present invention over the disclosures of Goodall et al, Allen and Aoai et al, the following experimentation was carried out under my supervision and control;

COMPARATIVE EXPERIMENTATION

The comparative experimentation was carried out in the same manner as in the example of the present specification, except that Resin (1) and Resin (1c) according to the present invention and the resin synthesized in Example 56 of Goodall et al were used as a resin component (B). The resin component and the other components used are as shown in Tables A, B and C, below.

The evaluation of the obtained samples was carried out in the same manner as in the example of the present specification. The results are shown in Tables A, B and C, below.

(1) The Evaluation Due to the Addition of an Amine

Table A below shows the results due to the addition of amine.

TABLE A

	(B) Acid decomposable resin	(A) Photo-acid generator	Surface Active Agent	Organic Basic Compound	Number of Development Defects	Defocus Latitude depended on line pitch
Example 11b	(1)	1	1	1	28	1.0
Example 12b	56*	1	1	1	36	0.8
Comparative Example 3b	(1)	1	1	None	120	0.1
Comparative Example 4b	56*	1	1	**	650	0.2

In the above Table A:
* "56*" means a compound synthesized in Example 56 of Goodall et al.
** Tetrabutyl ammonium hydroxide
Photoacid generator 1: PAG-1
Organic basic compound 1: Amine 1
Surface active agent 1: W-1

2) The Evaluation Due to the Addition of a Solvent

Table B below shows the results due to the addition of a solvent.

As the photo-acid generator, amine (i.e., organic basic compound) and surface active agent, PAG-1, Amine 1 and W-1 were used, respectively.

TABLE B

	(B) Acid decomposable resin	Solvent (weight ratio)	Particle (initial value)	Particle number after storage
Example 13c	(1c)	S1/S3/S6 (67/29/4)	28	<5
Example 14c	56*	S3/S5 (60/40)	90	10
Comparative Example 3c	(1c)	PGMEA	500	1200
Comparative Example 4c	56*	PGMEA	1900	2050

In the above Table B:
* "56*" means a compound synthesized in Example 56 of Goodall et al.

3) The evaluation Due to the Addition of a Surface Active Agent and the Evaluation Due to Addition of an Organic Basic Compound

Table C below shows the results due to the Addition of a Surface Active Agent and the Evaluation Due to Addition of an Organic Basic Compound.

TABLE C

	(B) Acid decomposable resin	(A) Photo-acid generator	Surface Active Agent	Organic basic compound	Number of Development defects	Defocus Latitude Depended on line Pitch
Example 13b	(1)	2	W-2	2	29	1.0
Example 14b	56*	2	W-2	2	39	0.8
Comparative Example 5b	(1)	2	None	None	2900	0.1
Comparative Example 6b	56*	2	W-4	None	210	0.2
Comparative Example 7b	56*	2	None	2	340	0.2
Comparative Example 8b	56*	2	None	**	490	0.1

In the above Table C:
* "56*" means a compound synthesized in Example 56 of Goodall et al.
** Tetrabutyl ammonium hydroxide
Photoacid generator 2: PAG-2
Organic basic compound 2: Amine 2

The above comparative experimentation and results shown clearly demonstrate the unexpected superiority of the use of the present invention over the cited references;

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: _____

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Kenichiro Sato